Amherst College

Trading Club Amherst College <trading@amherst.edu>

[Quant Club] Second Meeting Fall 2023 (Sunday 8-9 PM Beneski 107 - Paino)

1 message

Trading Club Amherst College <trading@amherst.edu> Sat, Nov 4, 2023 at 3:21 PM
To: Amherst Quant Trading <amherst-quant-trading-l@amherst.edu>
Cc: Alan Li <ali24@amherst.edu>, Dhyey Mavani <dmavani25@amherst.edu>
Bcc: cfea46fc-573a-b196-16ec-f7e50b65a010@relay.engage.campuslabs.com, Ryan Ji <tji26@amherst.edu>

Note: *Please feel free to share this email with anyone you think might be interested in this as well!*

Dear Quant Enthusiasts,

I hope you all had a great week so far! It was great to see some of you in our last meeting. Below I am mentioning logistics and agenda for the next meeting (along with a brainteaser that we will discuss) and the summary of last meeting along with some resources related to programs for freshman and sophomores, which can give you a step up (or expedite you to final rounds) at various firms. I have done a lot of these programs (some were invite-only, and some were the ones that I applied to). I have mentioned most of them at https://dhyeymavani.com and https://www.linkedin.com/in/dhyey-mavani/ so feel free to reach out if you have any specific questions as well, and I will be more than happy to help whenever I can!

Logistics:

Sunday, November 5, 2023
8:00 PM - 9:00 PM Quant Trading Club Meetings (Confirmed)
Beneski, 107 - Paino Lecture Hall

Meeting Agenda:

1. Pairing up people for the website team so that we can develop (for example amherstquantclub.github.io) to summarize resources and make a one stop resource, and build a virtual presence for **Amherst Quant Club (rebranded version)**
2. **Pairing and personally mentoring people to participate in *Optiver Trading at Close: Quant Research Based Competition*** https://www.kaggle.com/competitions/optiver-trading-at-the-close (credit: Nikolai Dammholz), here you will have two months to come up with data sciency models to predict movements of close prices :)
3. Discuss a brainteaser mentioned below *(please think over it before coming if possible)*
4. Have time for some Q&A regarding anything related to club and recruiting as well!

Brainteaser:

- Let's start with 1 player game. Your strategy is supposed to maximize earning from a 20 sided die, and you have 100 rounds. You can either roll or take the money equal to the face of dice up on the table. Find the EV of the game?
  - Now, if you take the money, then you have to roll again and take dice off the table, how do you think your strategy and EV would change in this case?
  - One more variant: come back to the initial conditions mentioned, and say now casino gets to play with you. Once you take the money, casino gets to choose whether or not to re-roll the die (Note: This is complicated enough, so you cannot calculate the exact solution by hand, but I am curious to hear how you think this version will work) Hint here is to think what number you are willing to accept and move on? Let's say you rolled 19, you take it, the obviously casino re-rolls, now what happens?
  - let's say we take you playing strategy of taking anything that is 10 or higher, what do you think casino is going to do?
  - why don't we play a scenario out: say you reroll if you get 10 or lower, and casino re-rolls you if you get 11 or higher, then how much money you will make in expectation?
  - In the last scenario, what you think is the average worth of each roll approximately, and how would you modify your strategy after realizing this?

See you all soon,
Dhyey Mavani
Computer Science, Mathematics, and Statistics major
Amherst College Class of 2025
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Available in Eastern Time Zone (Preferably Tue and Thu)

Loeb Center's Peer Career Advising, and ECON-361 TA Role Hours:

- **Weekly 1:1 Career Guidance:** Thursday 10:00 AM to 12:00 noon
- **PCA Resume Review Clinics:** Wednesday 6:30 PM - 8:00 PM
- **ECON-361: Advanced Econometrics TA OH:** Monday 7 PM - 9 PM

P.S. Stuff from last meeting and solutions to last week's brainteaser:

1. Quick Intro to club, leadership, and our goals for the semester, which are as follows:
   - Topic learning/discussion sessions **(People are interested in this)**
   - General Q&As **(People are interested in this)**
   - Quant Club Resources and Website Development Team Management **(People are interested in this)**
   - Brainteaser-based/game sessions **(People are interested in this)**
   - Recruiting help & Networking advice **(People are interested in this)**
   - Representing Amherst College @ Quantitative Trading Competitions **(People are interested in this)**
2. Pairing up people for the website team so that we can develop (for example amherstquantclub.github.io) to summarize resources and make a one stop resource. **(Seb Brown will lead this team, so feel free to let me know if you wanna join, since this will be**

a huge plus for your recruiting as well)

3. Have time for some Q&A regarding anything related to club and recruiting as well! **(discussed about timelines which are generally late August to early October for recruiting, and a lot of the week long in-office fully funded industry programs for freshman and sophomores take place in spring semester, with applications opening in late fall)**
   Here are some industry Programs:

   - Jane Street SEE, IN FOCUS, FOCUS, INSIGHT, FTTP etc.
   - Citadel Securities Trading Challenge, Discover, etc.
   - SIG Discovery Days
   - Akuna Options 101 Course and Options 201 course
   - Schonfeld SEE Program
   - D.E. Shaw & Co. Fellowships
   - Two Sigma Virtual Talks and Scholarships
   - HRT BIPOC Summit, etc.

Previous week's brainteaser:

- You are given a 100 sided fair dice. You get a chance to roll the dice, and you get paid the dollar equivalent of number that you roll if you decide to stop playing. But, if you are not happy with your number, you can pay $1 to get a chance to reroll.
    - Find the expected value of playing this game with the most optimal strategy according to you if you had atmost only one reroll. (***Hint:*** start by smaller cases, toy examples, or baseline strategies so that you can eventually build up logic for larger case)
    - Now find the expected value of playing this game if you have no restriction on number of times you can reroll

      SOLUTION ATTACHED (I have written down multiple methods and ways to both solve and get intuition for the presented problem, but by all means please send in other solutions that you might think are better, and I would be happy to include them in the solutions manual that I will prepare at the end of each semester)

Meeting 1 Brainteaser Solutions.pdf
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